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BRIEFER ARTICLES

ABNORMALITIES IN PROTHALLIA OF PTERIS LONGIFOLIA

(WITH FOUR FIGURES)

Some abnormal conditions in archegonia were noted in prothallia, probably of *Pteris longifolia*. The spores had been sown about the middle of October, on moist sphagnum in a low jar covered with a glass plate. The resulting prothallia, after three weeks, were partly used in class work. Those remaining after class use were put aside for further development, in the hope of getting material for histological preparations. No particular care was taken to keep conditions constant or normal. The moisture varied greatly at times, and the temperature was a very variable factor, since for some time the jar was kept on the sill of a none too tight east window. As a result of some extremely cold weather, it was removed to a less exposed position on a shelf, somewhat darker than that on the window sill. In January the material was killed and fixed in 0.6 per cent chromacetic acid, washed, dehydrated, and imbedded in paraffin. The sections were cut 5 μ thick. Safranin and gentian violet were principally used in staining.

The prothallia were unusually small, and in sections the sex organs appeared smaller than is usual in *Pteris*. In spite of many normal archegonia, 8 cases were found in about 35 prothallia where there were more than two neck canal cells. In 5 of these, there were definitely and certainly four such nuclei, either arranged in a row, as in fig. 1, or grouped closely together near the mouth of the canal. In the other cases, the condition of the nuclei was such that it could not be ascertained whether the number was three or four. The four-nucleate neck canal cell has been reported for Filicineae by Miss TWISS[1] in *Lygodium circinatum*, where occasionally this condition occurs instead of the usual two neck canal nuclei.

A second abnormality which occurred in these prothallia is shown in fig. 2. Here there are evident two eggs, two ventral canal cells, and the usual two neck canal nuclei. This condition has been reported for

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[1] TWISS, EDITH MINOT, The prothallia of *Aneimia* and *Lygodium*. BOT. GAZ. 49:168–181. *pls. 10, 11.* 1910.

Adiantum cuneatum by Miss LYON,[2] and again by Miss FERGUSON[3] in *Pteris*, probably *P. cristata*. Unlike the case cited by Miss FERGUSON, the basal cell did not give rise to the second egg and ventral canal cell, but had divided periclinally into approximately equal cells. In some other archegonia a similar periclinal division gave rise to two unequal cells, not strikingly different in proportions from an egg and ventral canal cell, but not having the characteristic granular appearance of such.

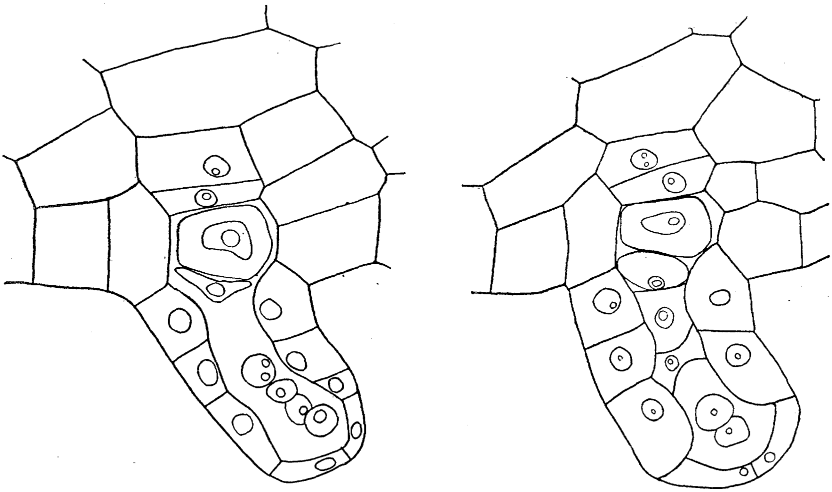

FIG. 1 FIG. 2

FIGS. 1, 2.—Fig. 1, archegonium of *Pteris longifolia*, showing four neck canal nuclei; ×500; fig. 2, archegonium in which two eggs and two ventral canal cells have been formed; the basal cell has divided periclinally; ×500.

A third unusual condition, of which no former report has come to hand, is one in which a definite wall has been formed between the two neck canal nuclei, giving two neck canal cells. This preparation is shown in fig. 3. The cells are practically equal in size and very similar, or one might be led to believe that this is an early stage in the development of such an archegonium as shown in fig. 2. In this archegonium the basal cell appeared to have divided unequally in a periclinal direction.

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[2] LYON, FLORENCE M., Evolution of the sex organs. BOT. GAZ. **37**:280–293. *figs. 16.* 1904.

[3] FERGUSON, MARGARET C., Imbedded sexual cells in the Polypodiaceae. BOT. GAZ. **51**:443–448. *pls. 26, 27.* 1911.

Although sporophytes were rarely found in the material used, one appeared in which an entire quadrant, the foot, had failed to develop. In another prothallium, there was a structure which appeared to be an apogamous sporophyte.

An antheridium, in which the basal cell has apparently given rise to spermatogenous tissue, is shown in fig. 4. The cap cell and ring cells appear normal, except for an unusual slope of the walls. Unfortunately the section figured was the last on the slide, so that the structure could be traced in one direction only.

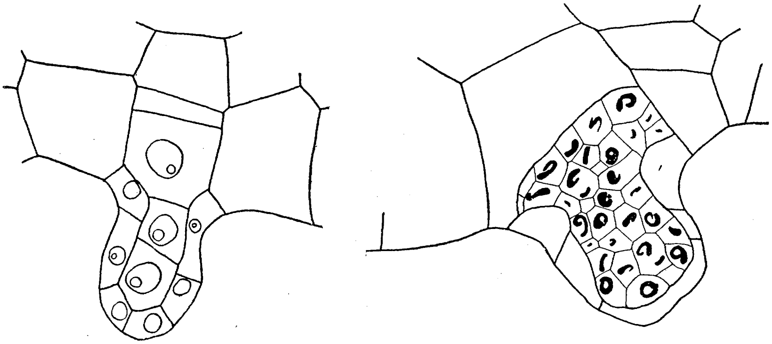

FIG. 3 FIG. 4

FIGS. 3, 4.—Fig. 3, archegonium showing a definite wall between the two neck canal nuclei; ×500; fig. 4, antheridium in which the basal cell has given rise to spermatogenous tissue; ×500.

The writer is indebted to Professor John M. Coulter and Dr. W. J. G. Land for suggestions in this work, and also to Mr. Loren C. Petry, who kindly turned over his excellent preparations made from this material.—Norma E. Pfeiffer, *The University of Chicago.*

SIR JOSEPH DALTON HOOKER

(WITH PORTRAIT)

The recent death of Sir Joseph Dalton Hooker, at the advanced age of nearly 95 years, removes from the ranks of living botanists one of the most distinguished scientific men of our times; his long, continuous, and active career of over 70 years in the botanical field has been equaled by few men. Joseph Dalton Hooker was born June 30, 1817, at Halesworth, Suffolk, England, and died December 10, 1911, at his home near London. The son of an eminent botanist, living in a scientific